Mercurius Centralis:

OR,

A Diſcourſe

OF

Subterraneal COCKLE, Muſcle, and Oyſter-ſhels,

Found in the digging of a Well at Sir *William Doylie*'s in *Norfolk*, many foot under ground, and at conſiderable diſtance from the Sea.

Sent in a Letter to Thomas Brown, M.D.

By *THO. LAWRENCE*, A. M.

LONDON:

Printed by *J. G.* for *J. Collins*, and are to be ſold at the Angel in *Ivie-lane*. 1664.

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Roger L'Eſtrange.

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TO THE Reader.

READER,

Am unwilling to make thoſe Common-Pleas *(with which thou haſt been ſufficiently tired already)*

dy) for my exposing this to the publick, *lest I become as* censurable *for those, as for the* Tract *it self. I must confess that I sent it* willingly *into the light; and although I cannot pretend any* general *good in it, yet it may be* useful *to some that are studious of* Natures book, *as another mans* discoveries *or rational* Discourses

may

may be to me. I do not fear to ſay, that I have ſo much doated on the Volumes *of the* Creation, *that as I cannot think the* meaneſt *of* Gods creatures *ſo* deſpicable *but that its* contemplation *deſerves to be matter of* buſineſs *as well as of* diverſion *to the wiſeſt; ſo (to thoſe that are conſiderate and obſerving) the* Arcana

Naturæ, *or (if it be lawful ſo to call theſe)* the magnalia Dei, *are much more* valuable *and worth our* ſearch. *If I have* diſcovered *any thing in this little handful, as I hope I have; or if the* diſcovery *can be to any, any way* uſeful, *as I hope it may be, either to ſatisfie, or at leaſt to actuate them to a further inquiry (the*

Field

Field *is large enough, we need not juſle*) *I have my* deſign. *And though it were, or be but a* partial detecting *of a* concealed truth; *yet even* that *will hide ſome* indiſcretions *in the management. However as* he *ſaid of* Evils, Μυεία χρύπτει κακὰ μυχός. *I may ſay of my* faults, *The ſecrecy of the buſineſs* diſcourſed *will hide the*

errours

errours of the diſcourſer. *But if thou ſhouldſt judge me* fond *of a* phanſie *or* invention, *I ſhall not fail of thy* excuſe, *ſince I am not the* firſt *that have run* naked *into* publick *with an* ἰυρηκα *in my mouth*; *what is* amiſs amend, *and*

Farewell.

T. L.

Mercurius Centralis:

OR,

A DISCOURSE

OF

Subterraneal Cockle, Muſcle, and Oyſter-ſhels, found in the digging of a Well, &c.

Doctor, I have made the beſt *inquiry* I could in ſo ſhort a time, after the trueſt *cauſe* of that *vein* of *Cockle* and *Muſcle-ſhels* that was digged up in *Norfolk*, ſo many foot *deep* under the ſurface

face of the Earth. And upon my moſt ſerious examination do believe, that that *reaſon* which I caſually bolted out when you firſt mentioned it to me, is the moſt *likely* and *probable*, if not the only that can be given of it; of which I will give more than empty conjectures in the following Diſcourſe. But before I come to unfold that my *opinion*; I will inſiſt on ſome things that relate to it, both for *method* ſake, and

and to gain a little the more *Reputation* to it; and then will give you, or any elſe leave to judge of it as you ſhall think fit; nor ſhall it diſpleaſe me if any are of a different judgment.

God that made the *Univerſe* for Mans *uſe* and *delight*, hath beautified it with infinite varieties. In the *animal* kingdom, what diverſity of Creatures, *Volatile*, *Reptile*, *Natant*, and *Gradient*? How different their *ſhape*, *uſe*, *colour*

lour, *greatneſs*, and *ſmalneſs*, their *ſents*, their *tempers*, *natures*? How various their *amities*, *enmities*, *ſympathies*, and *antipathies*? In the *Vegetable* kingdom, how different their *ſhapes*, *proportions*, *colours*, *orders*, *taſtes*; the *firſt*, *ſecond* and *other qualities* of their *leaves*, *flowrs*, *roots*, *barks*, *ſeeds*, *fruits*, *tears*, and *gumms*? Nor is Nature leſs *skilful* in generating and ordering the ſtrange *Forms* and *Figures* of *Subterraneal bodies*. Amongſt an hundred

dred thouſand *ſtones* on a *ſtrand*, a man ſhall not find *two* that in all things exactly *agree*; and yet there is many times ſome more *general* and *groſs likeneſs*.

But if we examine the ſeveral *ſpecies* of *Mineral bodies*, there will be viſible an admirable and pleaſing variety. Some are ſeen in the form of *Cylinders*, of which I have been preſent when many thouſands have been taken out of *Marle-pits*. Some are exactly *ſpherical* like

like Bullets, but much bigger; ſo equally round that no art can be more exact, and of them many *Ship ladings*, between two Hills in *Cuba*. Many hundred *flints* in the ſame form I have found diſperſedly near the place I live in: In which alſo I have obſerved that their *coat* and *external covering* is *white*; next to that the ſtone is very *black*; but nearer to the *Centre* it is of a *brighter* colour, in which by the help of a *Microſcope*

Ovied. lib. 17.

I have ſeen as it were little *ſparkling Diamonds*; in others of the ſame form I have found with my naked eyes many thouſand ſuch *ſparkling ſtones* as big as *pins-heads*, and ſome as big as ſmall *barley-corns*, of an excellent luſtre when they are held in the *Sun*. I have ſeen likewiſe *Foſſiles Ætites*, if I may ſo call them; *ſtones* in an *Oval* ſhape as big as *Pigeons Eggs*, hollow in the inſide, and *impregnate* with *leſſer ſtones*, which on the ſha-

king

king betray'd themſelves by their ſound, as the *kernels* in the dry *ſtones* of *Peaches*. *Diamonds*, and our *Corniſh* and *Briſtol ſtones* are all generated with
Mr. S. S. *ſpires* or *points*. A friend of mine imparted to me a *fluor* that grew on a *rocky ſtone* that is very *clear* and *ſhoots* in the ſame form, and is ſo *hard* that it will cut *glaſs*. Some are ſeen in the form of *Cones*, ſome of *Pyramids*, ſome of *Semiſpheres*, and *gutter'd* and *furrow'd* on the ſides like

like the *pummels* of ſome *Swords*; ſome *ſmooth*, ſome *writhed*. *Cryſtal* doth *ſhoot in ſexangulos*. I ſaw *ſtones* digged out of a little *Cavern* by a Springs-ſide between St. *Ives* and *Somerſham* in *Huntingdon-ſhire*, every one of them had the ſame *Figure*, and were in compaſs *ſexangular*, with two broader and more depreſſed *ſuperficies*, on either ſide it made a perfect *Rhomboides*, clear as *Cryſtal*, but very ſoft and apt to ſcale; of which none knew

knew any conſiderable uſe: only the powder of it was found good to *Cicatrize* green wounds. And indeed almoſt all ſorts of *ſtones*, whether more choice and *orient*, or more baſe and vulgar, have for the moſt part beſides their different vertues, ſeveral *Figures* and *Colours*. But theſe are mean, low and common obſervations. What ſhall we think of that, *Cornu Monocerotis foſſile*; thoſe *oſſa ſubterranea & foſſilia*, which

which are very often generated of *ostеocolla* and the like ſubſtances, and have given *conplexion* to thoſe ſtories of * *Gyantick races*

* Not that I deny that *there have been men of vaſt bodies in ſeveral ages. The Sons of* Anak *were without queſtion very great men.* Goliah *and others mentioned were Giants. We read of Giants famous from the beginning, that were of ſo great ſtature and ſo expert in war,* Baruch 3.26. *of the Sons of the* Titans *and high Giants,* Judith 16. 7. *At* Coggeſhall *were found two teeth that might have been cut into two hundred of an ordinary ſize.* Camb. de Trinobant. St. Auguſtine *ſaw ſuch an one at* Utica. *But theſe even in the Scripture, the moſt exact hiſtory in the World, are recorded as rare; ſo that I do not believe that they have been common in any Country, much leſs that any Country hath been inhabited by only ſuch. An old Poet cited by our Antiquary*

quary ſpeaking that Cornwall *was the ſeat of ſome, ſaith they were but few.*

— — — — — Tirambus illa
Sed paucis famuloſa domus.

Vid. Hackwell in Apolog. de hoc ſubjecto.

in ſeveral Countries; becauſe this, like *bones* of men, hath been found of a vaſt *bigneſs*? What ſhall we think of thoſe *bones of Fiſh*, and ſuch *Subterraneal Muſcle and Oyſter-ſhels* found at *Darmſtadt* in the *Palatinate*, and at other places near *Heidelberg*, and in *Sileſia*, and thoſe you mentioned to me? At *New-houſe* a ſeat of one Mr.

Mr. *Eyres* in *White-Pariſh* in the County of *Wilts*, as they were digging of a Well about *thirty foot deep* (as it was related to me) between two *veins* of *ſand* were found infinite numbers of *Oyſter-ſhels* in a *bed*, both *ſhels* cloſed together, and nothing diſcernable between them but a little *duſt*. But farther yet, what can we ſay of thoſe *Tables* of *ſtone* in which are ſeen the *Pictures* of divers *Planets*, of *Frogs*, *Serpents*, *Salamanders*;

ders; nay, *Principum & illuſtrium virorum imagines*, as *Sennertus* ſaith are found in *Iſlebia*? I my ſelf have ſeen an *Agate* with a natural *foil* like a *Blackmoores head*, and another like an *Oaken leaf*, that ſome have went to bruſh away, and yet it was within the ſtone, and ſo exact too, that it deceived the very ſight. *Eraſmus* deſcribeth one that he ſaw in *England* in a *Temple* at the feet of the image the *Virgin Mary*, in which there

Epitom. Phyſ. lib. 5. cap. 4.

there was the form of a *Toad*. I will ſet it down in his own words. Og. *Ad pedes virginis eſt gemma cui nondum apud Latinos aut Græcos nomen inditum eſt, Galli à Bufone nomẽ dederunt, eo quod bufonis effigiem ſic exprimat, ut nulla ars idem poſsit efficere. Quodq; majus eſt miraculum; puſillus eſt lapillus; non prominet bufonis imago, ſed in ipſa gemma velut inclusa pellucet.* This, *Menedemus* that diſcourſeth with him, imputes rather to the *fancy* of the beholder;

Eraſm: Coll. Pegrin. religi. Ergo.

as Children think they ſee *heads*, and *faces*, and *bulls*, and *ſwords*, in the Clouds. But he anſwereth. *Imò nè ſis neſciens, nullus bufo vivus evidentiùs exprimit ſeipſum quam illic erat expreſſus.* And from his companions incredulity taketh occaſions largely to diſcourſe the ſtrange *forms* of *ſtones*. Now although it be impoſsible to find out the certain *cauſes* of theſe moſt *noble* and *recluſe* works of Nature, theſe being

being ſuch things wherein we have very great reaſon to admire the *providence* of *God*, and his moſt *perfect work-man-ſhip*, that hath given to each creature (as *Scroder* calls it) *rationem ſeminalem*; or as *Severinus*, the *knowledge* or *ſcience* of its own *proper form*. And indeed ſome of them are in this as certain as the moſt *voluntary agents*. And even thoſe which caſually obtain theſe ſhapes may be gueſſed at, for (beſides

the *luſus naturæ*, which moſt flie to) the creatures they repreſent may be *petrefied*, *à ſpiritu lapideſcente*; or may be incloſed as in a *Coffin* in the purer *unconcrete matter* of *ſtones*; which being ſpeedily *hardened*, and thoſe in ſome meaſure *aſsimilated* to that *ſtony ſubſtance*, their lineaments *ſhine through*, as *Flies* caſed in *Amber* are ſeen almoſt as *clearly* as if they were out of it. And particularly for ſuch *ſhels* we are now to diſcourſe of, there

there may be ſome conjecture had of ſome of their *forms*; and this brings me to diſtinguiſh between *Muſcle* and *Cockle-ſhels really*, and ſuch in *ſhape* and *appearance* only; for I have ſeen many *ſtones* in the *ſhape* of theſe, which I imagine were thus made. The *Oyſter*, *Muſcle*, *or Cockle-ſhels*, lying in ſuch places where they have been caſt out by men, have *caſually* received the *ſuccus lapideſcens*, or *unconcrete matter* of *ſtones*, and

have become a *bed* or *matrix* to it; and ſo hath that *ſtone* been ſhapen according to this *mould*, as *gourds* while they are young put in *glaſſes* grow not according to their uſual natural *form*, but according to the *ſhape* and *proportion* of the *glaſſes*.

2. If they were *really Muſcle* and *Cockle-ſhells*, that could not be the *place* of their *generation*, but they muſt be by ſome *violence* and *impetuoſity* hurried thither; and for their

loco-

loco-motion we can find no other *Media* than the *earth* or *air*. And *firſt* for the *air*. Thoſe that have ſailed to the *Indies* can inform you with what force *Hircanoes* or *Turbines* (which ſome diſtinguiſh; but I think that there is no other difference between them, than that the *Hircano* is a *circumagitation* of the *air* or *whirlewind* tending *downwards*; and the *Turbo* the *whirlewind* tending *upwards*) the meeting together of contrary furi-

ous winds, have taken up whole Seas of water; and what ſhould hinder them that when they fall foul near a *ſhore*, they ſhould not rake the *Seas*, and carry other bodies beſides the *water*? Some *Mariners* in the *North-weſt diſcovery* were eye-witneſſes of ſuch a *whirlwind*, that for the ſpace of three hours together, took up vaſt quantities of *water*, furiouſly mounting them up in the *air*. And altogether as ſtrange hath the force of

Hacklyt. Diſc. to. 3. p. 100.

it

it been on *dry ground*; of which *Bellarmine* gives us a relation that it is ſo *incredible*, that he premiſeth this, *Quod niſi vidiſſem, non crederem.* He thus deſcribeth it; *Vidi ego à vehementiſsimo vento effoſſam ingentem terræ molem, eámq; delatam ſuper pagum quendam, ut fovea altiſsima conſpiceretur unde eruta fuerat, & pagus totus coopertus & quaſi ſepultus manſerit, ad quem terra illa devenerat.* It is ordinary in moſt *hiſtories* to read of *bloud* fal-

Bell. de Aſcenſ. ment. in Deum, Grad. 2. cap. 4.

falling in *ſhowres*, or at leaſt of what is *analogous* to *bloud*, of *wood*, *wool*, *worms*. *Munſter* * tells us of *Frogs*, *Mice*, and *Rats*, that fell with ſome *feculent ſhowres* in *Norway*. There is one at this time living, that walking through a low *mariſh ground* in *England*,

Anno ab urbe condita ccccIxxx *lac de cœlo manare viſum eſt. Oroſ. lib. 4. cap. 5.*

In the fourth year of *Ivor* the ſon of *Alan* in *Wales*, it rained bloud in *England* and *Ireland*. Welch. chron. *Gabiis lacte pluit. T. Græcho, Tit. Manlio, Coſs. In Græcoſtaſi. C. C. L. Cai. Sext. Coſs. Præneſte. L. Cecil. L. Aurel. Coſ. In Agro Peruſino P. Sor. G. Atil. Coſs. ſanguine per biduum pluit in Area Vulcani & Concordiæ. M. C. Quint. Fab. Coſs. Lapid. Pluviæ. In Aventino Tuſcis lapidibus pluit. Vid. Jul. Obſ. de prodig. ad fin. Plinii.*

* *Munſter. Coſmog. lib. 4. cap. 22.*

in

in a *foggie* morning, had his Hat almoſt covered with little *Frogs*, that fell on it as he walked: and many at ſome times on the *tops* of *houſes* and *leads*, have found great numbers of ſuch *creatures*. At *Arles* in *France* in the year 1553. *Infinite ſwarms of Locuſts fell on their fields, and immediately devoured all that was green, Magnâ incolarum admiratione & conſternatione.* So we read that by an *Eaſt wind* the *Locuſts* which covered the face of *Egypt* were

Valeriol. obſ. lib. 1. obſ. 1.

were brought on it, & by as a ſtrong *Weſt wind* they were carried off again; *Exo.* 10. 13, 19. *Stones* likewiſe have thus fallen. In *Japan*, on a day when they *ſolemnized* a great *Feſtival* to their *Idol*, there fell among them a great *ſhowre* of *ſtones*, which ſlew many, and put the reſt to their heels to ſhift for themſelves. And it is very likely that thoſe *ſhowres* of *hail* that ſlew ſo many in ſeveral ſtories, were *grandines lapidum*, (as

Organtius.

Lactantius

Lactantius calls those *ſhowres* of vengeance, that God will at the laſt ſend on the *Devil* and his *accomplices*) to which the expreſsion of *hiſtory* agrees. At the time of *Alexanders* birth, *Saxea de nubibus grando deſcendens, veris teram lapidibus verberavit.* And to this is the *Scripture* conſonant, *Joſ.* 10. 11. For what is called *hail* in the later part of the verſe, is *ſtones* in the former. *And as they fled from before Iſrael, and were going down to* *Lactant. Dio. Juſt. l. 7. c. 26.* *Oroſ. l. 3. c. 6.*

Be-

Bethoron, the Lord caſt down great ſtones from heaven upon them unto Azekah, and they died. And that heterogeneous bodies are found in *mines*, and on the *tops* of *mountains*, *Ariſtotle* inſinuates this to be the *cauſe*, *viz.* that they are brought to ſuch *places* by the *winds*. It ſeems I muſt confeſs the more colourable, that things ſhould be brought this way from the Sea, becauſe the Sea both of old, and more lately, hath been deemed to be the

Ariſt. Meteoro.

father

father of the *winds*. *Eraſmus* deſcribing *Paratha-laſſia* ſaith, *In propinquo eſt oceanus ventorum pater*, and the *old Poet* ſpeaking of the *generation* of the *winds*, finds out the ſame *cauſe*:

Peregr. relig. Ergo.

Ος τε ἀϱυσάμενος ποταμῶν ἀπο ἀεὶ —ναόντων
Τῷ ὑφ' γαίης ἀϱθεὶς ἀνέμοιο θυέλλη.

Heſiod. Oper. & dies p. 44. 28

And therefore *winds* have in ſome places been obſerved to be *Obſequious* to the *courſe* of the *Moon* as the *waters* are, which that *Roman Poet* hints.

Thra-

Horat. Carm. lib. 1. Od. 25. *Thracio bacchante magis ſub interlunia vento.*

'Tis true, no man can tell the force and fury of the unbridled winds, that are ſo mad that they know not whence they come, nor whither they will. But yet were ſuch *heterogeneities* which are found ſo *deep* this way *brought*, they ſhould be found in all or moſt places alike; and they ſhould be found above ground too, unleſs we can imagine that immediately on their fall-

falling the Earth ſuffer ſome *Chaſm*, and doth ingulf and ſwallow them into its *bowels*. And therefore it is moſt probable they are brought to ſuch places from the Sea, the place of their Generation, generally *under the Earth.*

3. If they are brought from the *Sea* to the place they are found in, *under the Earth*, it muſt be either by a *natural* or by a *ſupernatural impellent or mover*; by *ſpirits*, or by a *natural vehicle*. No man that is either a

Phi-

Philoſopher or a *Chriſtian* can doubt of the power of *ſpirits*, by *Gods command* or *permiſſion*, to effect this and many more actions that are far more difficult and unlikely. And *Paracelſus* with ſome others would have us believe that there are innumerable ſuch *ſpirits* or *genii* that inhabit the *Earth*, as he hath projected there are Inhabitants of the *Sun*, *Moon*, and other *Planets*, which he calls *Solar*, *Lunar*, *Saturnine*, *&c.* and

of

of the *air* which he ſtyles *aerial.* And to their managements referreth all the natural motions of *Generation* and *Corruption*, and the violent, as of *Chaſms*, *Earthquakes*, and other alterations in the bowels of the Earth. Nay, they reduce them to ſeveral *Claſſes* and *Orders*, and with a little invitation would be ready to ſwear, that many of them are *Engineers* that contrive the *Water-works*, and make *Rivers* and *Aqueducts*; that ſome

ſome are *Blackſmiths* by Trade that work in the *Vulcanoes*; that ſome are *Brewers* that boil *natural baths*, and uſe *Minerals* inſtead of *Mault*. But theſe opinions are ſuch, that beſides their own natural abſurdity, our Religion will teach us to explode, and are then confuted when they are only named. For though we grant that ſome ſuch things are poſsible to be done by the *Devil*; that is not ſo the Prince of the

power

power of the *air*, as not to be the *God* of this *lower world*; yet to impute all things to them muſt needs be *aſylum ignorantiæ*, and a *Remora* to all *ingenuous* and *Philoſophical diſquiſitions*, of the *nature* and *cauſes* of all things and actions in the *bowels* of the *Earth*, and a means to make us know no more of *nature* than what is *obvious* to *ſenſe*. So that I take it for granted, that ſome *natural*, *ordinary vehicle* there is under the *Earth* that brings

brings such *heterogeneous bodies* from their *native* and *genial seat*, and *proper place*, to such *Vaults*, *Hills*, *Veins*, and *Caverns* where they are found.

4. Now the most likely *movers* of all others to carry bodies of *weight under* the *Earth* are two; either *exhalations* or *waters*; for as for *vapours*, I look not on them as capable of carrying any thing of *weight*, especially so *low* in the *Earth*, where they cannot be so much *rarefied*, by rea-

reaſon of the *natural coldneſs* of that *Element*. 'Tis true, *May-dew* which is a *vapour condenſed* will carry up an *Egg-ſhell* in which it is put, by the help of a *Pike* or *Spear* placed by it. But this is in the ſight of the *Sun*, and if ſo much as a *thin cloud interpoſe* it falls again immediately: Again, the *ſhell* is exceeding light; beſides that, the *dew* is ſealed in it that it cannot get out; and even this moves *upwards* towards the *Sun*, not *ſide-*

wayes

wayes along the *Earth.* So that it muſt be concluded, that vapours cannot be ſerviceable to our purpoſe, ſo as to force whole *veins of ſhels* or other *bodies* to places ſo *far diſtant* from the *Sea,* and there to *ram them in.* It remains then, that this be effected by *one* or *other* of the *former means.*

As for *exhalations,* and that their force is ſuch that can *impetuouſly move bodies* of the *greateſt weight,* we need look no further than

than our *Gun-powder*, and the *Machines* or *Engines* that are uſed by or with it; ſuch as *Cannons*, *Bullets*, *Balls* of *Lead* or *Iron*, *Stones*, *Granadoes*, *&c.* of which ſome, by the help of a *cold* and *dry exhalation* pent in the *Niter* or *Salt-Peter*, and ſuddenly by *fire* flying out, make as ſtupend refractions of the *air*, and obtain a *violence equal* to that of our uſual *thunder* and *lightnings*. And after the ſame manner is their *force* and *light cauſed*,

the *violence* and *noiſe* of *Aurum Fulminans*. And theſe *exhalations* which have ſuch effects *above*, have the ſame ſtrength *under ground*, as appears by *Earthquakes*, with which there are uſually heard a * *murmur* and *ſound*. When *Sempronius Gracchus* was

* *Terra mugi u tremuit*

M. Cat. Quint. Mart. Coſs. Fremitus infernus ad Cœlum ferri viſus M. Anton. A. Poſth. Coſs. Fremitus terræ etiam Faſulis auditus M. Perpenn. Cai. Claud. Coſs. The City *Ferrara* in the year 1570. was ſurprized with a fearful noiſe, as if it had been battered with great Ordnance, afterwards with a moſt violent trembling.

ſet-

ſetting on the *Picæni*, and they were juſt joyning battel; * *tam horrendo fragore terra tremuit, ut ſtupore miraculi utrumque pavefactum agmen hebeſceret.* Theſe make the Earth tremble, the Mountains rowl, the Rocks quake, and eſpecially if the *exhalation* that cauſeth them be *impregnate* with *Nitro-ſulphureous ſpirits*, which have ſometimes thruſt out *hills* where there were plains, *Iſlands* in the midſt of Seas, made huge *Rivers*

* *Oroſ. lib.4. cap.4.*

where there were none, turned the *current* of ſome, *ſtopped* others, left *vaſt caverns* and holes, depreſſed *Mountains*, ſwallowed *Cities* and *Armies*, ſubverted *Temples* and *Palaces*. *Cizicus* a *City* of *Miſia minor*, with the famous *Temple* of *Jupiter* there, were both ſwallowed in an *Earthquake*; and ſo was *Philadelphia* another *City* of the ſame *Miſia*, and one of the Churches St. *John* writ to. *Apoc.* 3. 7. In an *Earthquake* in *Vinianfu* in

in *China*, the *Nitroſulphureous ſpirits* burſt out of the *Earth* in ſuch an *actuall flame*, that it conſumed the whole *City* and innumerable people. At *Hien* in the ſame Country, the *fall* of the *houſes* by the ſame *Earthquake* ſlew *eight thouſand*. At *Enchinoen* an *hundred thouſand* periſhed. Immediately on the bitter perſecution of *Diocleſian*, a fearful *Earthquake* happened in *Syria*, by which *Tyre* and *Sydon* were almoſt deſtroyed, and *Oroſ. lib. 7. c. 17.*

many *thouſands* were kil'd.

Lucan. lib. 1. ——*Quatiente ruina*
Nutantes pendere domos.——

Or as the ſame *Author* elſewhere deſcribeth an *earthquake*,

——*Cardine tellus*
Subſedit, veterémq; jugis nutantibus Alpes
Diſcuſſere nivem.——

Joſ. Antiq. l. 9. *c.* 11. We read of one in *Judeah*, at *Uzzah's* uſurpation of the Prieſts office, which rent the *Temple*, and a Hill in the *Eaſt* was removed four furlongs towards the *Weſt*; of another in *Herods* Reign,

Reign, that ſlew *ten thouſand Jews.* *l.15.c.7.*
Marcley hill with us in *Hereford-ſhire*, *Anno* 1571. with a great *noiſe* removed it ſelf from its place, and went continually for *three dayes* together, overthrowing *Kinnaſton Chapel*, bearing the earth 400. yards before it. And therefore *Exhalations* may be granted to remove *ſtones* and *ſands*, and with them ſuch *heterogeneous bodies* as lie on them, from one place to another, from the *ſea* to the

hills, from a *coaſt* far into a *countrey*. But *Earthquakes* are not frequent in any places unleſs near *Vulcanoes*, and are leſs uſual in theſe parts; and yet in moſt places all over *Europe*, ſuch *heterogeneous bodies* have been found under the Earth, at great diſtance from the Sea. Again, the force of *Exhalations* is moſt evident in *mountainous, rocky countreys*, becauſe when they are pent into ſuch places they cannot have vent; whereas theſe bodies

bodies are often found in *moſſes*, *bogs*, and *mariſh grounds*, as frequently as in other earth.

5. So that they are moſt likely to be hurried thither by the force of *waters*, paſsing from the *Sea* through the caverns of the *Earth*. The reaſonableneſs of which opinion will the better appear, if we conſider that,

1. As the Earth is of a vaſt compaſs, and no leſs than 7000 *miles* in *Diameter*, of which the Water doth not

make above one third part of the *Globe*, and that on the *ſurface* of Earth too; and ſo far as was ever yet diſcovered of the *Earth*, no part of it is deſtitute of ſome *mineral ſubſtance* continually generating in it, unleſs where either the *Sun exhales the force* of it, or Nature is otherwiſe imployed in *producing Vegetables*. So that if the *Earth* be kept from the ſight of the *Sun*, and the *production* of *plants*, nor is apt to other *generations*

tions, yet it fails not to produce *Saltpeter* or *Nitre* in good quantity. And this is the reaſon that *Saltpeter-men* dig in *Stables*, *Cellars*, and other houſes. So that in the whole *bowels* of the Earth, what vaſt heaps, what mountains of *metalls* are there? Some *in fieri*, ſome *in facto eſſe*; perfect and imperfect; *mean metalls*, *Stones*, *Fluors* of all ſorts, *Salts*, and *concrete Juices*; beſides the ſeveral ſorts of *Earths*, *Chalks*, *Boles*, *Bitumina*, and

and the mixtures of all or any of these, of which it were much too large, and more besides my purpose particularly to discourse.

2. Where there are so *vast* and *numerous generations*, 'tis impossible that they should succeed without vast quantities of *Water*. Nay, to speak more home, the first matter that hath been yet discovered of all *Minerals*, is no other than a certain *Juice* or *Water impregnate* with the *seminal vertue* of this or that

that *Mineral ſtone* or *Metall*, which from *water* (when it hath found a convenient *matrix*) becomes a *gelly*, and from a *gelly* this or that *ſtone* or *metall*. This is obvious from ſeveral *ſprings*, whoſe water *impregnate* with the *ſeeds of ſtone*, having found a place of *reſt* convert into *perfect ſtone*. Of which ſort, we read of ſome in * *Hungary*, of others in *Peru* by * *Acoſta*. In *Guancavilica* there is a Fountain that turns into a *Rock*, with which

* *Wurtner. de Aq. Hungar.*
* *Acoſt. l. 3. c. 17.*

which an whole *village* is built. At *Newnham Regis* in *Warwick-ſhire*, our *Geographers* tell us of a *Well* that after the ſame manner turneth *wood* into *ſtone*; of another in the the *North*, that dropping from above into a Cave, becomes *clear* and *very hard ſtone* beneath. *Rivus eſt apud Scotos Ratra dictus, in cujus ripa eſt ſpelunca, in qua guttatim ex fornice diſtillans nnda lapideſcit in metas, quæ niſi tollantur humana induſtria, ſpatium totum opplerent*

Bert. Geog. p. 127.

rent. Some *Minerals* are no other than certain kind of *Juices accreted,* as *Allum, Vitriol, &c.* And *Mine-maſters* have ſometimes found *Metalls liquid* and *unconcrete* when they have peirced a *Mine* too ſoon; *Matheſius* mentions *liquid Silver* found by ſome. And for this without doubt among other cauſes, is *water* by the *Ancients* called *Panſpermia*; for that the *ſeeds* of things in the Earth have very little vertue without this,

this, *Moſes* inſinuates, *Gen.* 2.5. where he gives this reaſon why no Plants yet grew, *viz.* becauſe they lay *in arido, for the Lord had not cauſed it to rain on the earth.* I am very confident that the *Poets* did not only call *Venus* the *Goddeſſe of generation*, Αφροδίτην ἐκ θεὰν, *the ſpume-born Goddeſſe*, from the *ſaltneſs* of the *ſpume*, (though ſome of later date have therefore called her Αλιγένην) but from the *waters* that bare it. Nor is there any queſtion

to

to be made, but that the Inhabitants of the *waters* are therefore more *numerous* than other creatures, not for any *ſaltneſs*, which at the moſt can but * *irritate* to copulation, but doth not render the *ſeed* ever the more *prolifical.* For *freſh water fiſh* are as *multiplicative* of their *ſpecies* as the other in proportion. There is not a fiſh that ſwimmeth in the deep that hath a greater

* *Ægyptii ideo à ſale abſtinuerunt (teſte Plutarcho) quod ſalem venerem irritare perſuaſũ haberent.* Levin. Lemn. de Nat. Miracul. l. 2. p. 228.

ter quantity of ſpawn conſidering his bulk, than a *Carp*; yet it is a *freſh water fiſh.*

Nor can I believe there can any other reaſon be given, why the *Iriſh women* have ſo *many Children*, than becauſe their *Country*, and conſequently *themſelves*, are ſo exceeding *moiſt*, as appears by their *ſtature*, their *pale countenances*, their *flaccid*, *ſoft* and *phlegmatick habit of body*. And indeed I think that it were as reaſonable to ſeek for *taſte* in an

an *egg*, as for *ſalt* in the *ſperm* of *fiſh* or any other creature; for by *virulent Gonorrhœa's* it appears that a *ſharp* and *ſaline quality*, is a token rather of *corruption* than of any *active* and *generative energy*. *Et quod veriſſimum eſt dicimus*; *Novimus & jam noſco mulieres varias conjugatas ſat juvenes, quæ ab erroribus dietæ à Pica ſive Malacia cauſatis, præcipuè à ſalitorum, vel potiùs ab incommiſti ſalis eſu, non tandum ſordidos pallidos fœtidoſque obtinuere colores; cutes*

Ex ovo omnia. Harv. And what taſte is there in the white of an egg? *Job.*

tes impolitas & rugoſas, ventriculos nauſeabundos; verumetiam ſuffocatæ omnino evaſerunt & ſteriles. But although I attribute the effects above mentioned to *water* rather than *ſalt*; yet it would not be conceived to *imbibe Thales Mileſius opinion*, that *aqua* is ſo named, *quaſi à qua omnia*, as if all things were from it; and yet do believe that it is *cauſa ſine qua non*, and a great *nurſe* and *foſterer* of *Generations*, if not a *Parent* of them. And of *Minerals*

rals too; especially if we should embrace the opinion of the *Peripateticks*, that all *mixed bodies* are immediately *composed* of the four *Elements*; for then these being the most *ponderous bodies*, must needs have in them the most *weighty Elements* in good quantity, and those are *Earth* and *Water*.

3. The *Sea* is the original of all Waters; nor could any fountain else afford enough to supply the Earth to all uses.

That

That which by the *Neoterricks* hath lately been found out, of the Circulation of the Bloud and Humours in the *Microcosm*, was long since discovered (which might posibly hint that) in the greater world. *Eccles.* 1.7. *All rivers run into the Sea, yet the Sea is not full: unto the place from whence the rivers come, thither they return again.* And what huge quantities of water must be necessary for the whole Earth, may be

hence

hence inferred, that the *ſuperficies* of it needs ſo much, that beſides the innumerable Springs, Fountains, Chanels, Rivers and Lakes with which it is irrigated, were it not for frequent ſhowres from above, would ſoon be parched up, and unable to produce *ſuſtenance* for Man or Beaſt; which help the bowels of the Earth are deſtitute of; for the moiſture of *ſhowres* peirceth not above ten foot deep at the moſt.

And

And indeed, this is the onely reaſon that can be given of the *Seas ſaltneſs*, becauſe it doth waſh, and ſo diſſolve much *ſalt* from the rocks of Salt in ſubterraneal caverns where it doth paſs, and would long ere this have cauſed places, where ſuch *rocks* have been, to *ſink in*: But that, firſt, there is a *continual generation* and *accretion*, as well as a *diſſolution*; and ſecondly, becauſe that *Salt* is very hard, inſomuch that ſome

ſtones

ſtones of ſalt there are found in ſeveral waters undiſſolved; as thoſe of which *Cambden* informs us in the River *Weere* near *Batterby* in the *Biſhoprick of Durham.* And as for that dreadful ſtory of *Lots wife* turned into a *pillar of ſalt*, *Gen.* 19.26. as we are to believe the thing, ſo may it not be improbable that it was termed a *pillar*, as well for the *ſolidity*, *durableneſs*, and *difficulty of diſſolution*, as well as for its *ſhape* and *form*; *God*

Cambd. Brit. Brigant.

ſtriking her in that manner, as a more *durable monument* of his anger againſt Diſobedience. And our *glaſs* at this day is but *ſalt* after its *higheſt fuſion*, and yet it is very *ſolid* and *durable*, and *imports no quality to water*. Thirdly and laſtly, the *Sea-water* having imbibed ſo much *ſalt* before, is the leſs able to diſſolve more.

4. That though the *Sea* on the *coaſt* near the ſhore, may communicate its waters by *perlocation*,

tion, yet to places at great diſtance it cannot paſs ſo as to afford a due ſupply, but by *Gulphs* and *ſubterraneal In-draughts*. In many places of the world they make the *ſea-water potable* and *freſh* by *digging of pits* in the *ſand*, into which the *ſea-water* ſtreining it ſelf, leaves its *ſaltneſs behind*. But this muſt be done at no great diſtance from the *Sea*, and it muſt be in *ſand* or *clay*, or the like; for if the ſhore be *rocky*,

it will not do; as we ſee in many places where they dig a very great depth for *freſh water* near the *Sea*, and cannot be ſupplied till they find a *freſh ſpring*, a great many foot under the *ſurface* of the *Sea*. So we ſee that when we *filtrate* liquors through *ſhop-paper*, if it be thin and *bibulous*, it paſſeth; if thick and too cloſe, it will not paſs. Some illuſtrate the *percolation* of the *ſea-water* by this *experiment*. Take

a round ball of *moiſt clay*, make it *hollow* in the inſide, fill it with *ſalt water*, lay it to the *fire*, and it will *extill* by the *pores* of the *clay*, and become *freſh* and *inſipid*.

Now that there are vaſt *gulphs* and *chanels* from the *ſea* under the *earth*, will eaſily appear, when we conſider, that ſome great *lakes* and *oceans* there are, that have no other way to *vent themſelves*. What way can the *Caſpian Sea* exonerate it ſelf

by, after it hath taken into it *Volga*, *Jaxares*, *Ochus*, *Oxus*, and other huge Rivers? What other reaſon can be given why ſome *lakes* are full of *ſea fiſh*, and yet at great diſtance from *the Sea?* In *Bainoa*, a Province of *Hiſpaniola*, is a *lake* of *ſalt water* which hath 24 Rivers running into it, yet never increaſeth, and hath *Sharks* and other *ſea-fiſh* in it. Again, there are *ſalt ſprings* in all Countreys that *ebbe* and

and *flow* as the Sea and the Coaſts do. There are alſo *ſalt rivers*, as *Ochus* and *Oxus*; *ſalt lakes*, as that before mentioned. Beſides this, it is ordinary for *chanels* and *rivers* to run a great way on the *earth*, and then to *ingulp themſelves*. The waters of the *Cirknickzerkſey lake* in *Carniola*, guſh with that violence and ſwiftneſſe out of the ground, that they will overtake a ſwift Horſe-man, and preſently are ſwallowed. *Georg. Witnerus.*

in a *deep gulph* again. In the Province of *Caztium* in *Hiſpaniola* is a great *cave* in an *hollow rock*, under the root of a very *high mountain*, in which divers Rivers, after they have run *fourſcore and ten miles*, paſs as into an *indraught*, and are ſwallowed up. In moſt Countreys we read of the like. A mountain there is in *Caermarthen-ſhire*, where *Careg-caſtle* ſometimes ſtood, in which are many *ſpacious*

cious holes and *wide caves*, with a *Well* that *ebbs* and *flows* as the *Sea* on the Coaſt doth, twice in *four and twenty hours.* The Current of one and the ſame *Sea* in ſeveral parts contrary ways demonſtrates this, as in the *Atlantick Sea*, in ſome places *from*, and in ſome places *towards the North*, like Liquor in a *funnel.* In ſome places there are *whirlepools*, whoſe waters turn clean *round*, inſomuch that if a *Ship* at

ſuch times come over them, they are in moſt extreme danger of *ſinking*: At other times the waters with that *violence* come *out* of the *earth*, that a *Cannon* caſt overboard will not *ſink*. This cauſed *Taurellus*, and ſome others, to think theſe the onely cauſe of the *Tides*. *Andreas Moralis* on the Coaſt of *Hiſpaniola* was ſucked into *whirlepools*, where with that *violence* the *water* was *drawn* into the *earth*, that with

Such an one there is in the North Sea, near the coaſt of *Norway*.

Moral. decad. 7. c. 8.

with extraordinary toil the *Ship* hardly escaped *sinking*. Again, the *heterogeneous bodies* that are found so deep, are such usually that either are *generated*, or most usually *dwell* in the *Sea*; as *shells*, *bones of fish*, *masts*, *anchors*, *parts of ships*. At *Bern* in *Switzerland*, *Anno* 1460. *fifty fathom deep*, *in a Mine where they got metall-oar*, a *Ship was digged up*, *in which were forty eight carkases of Men*, *with other merchandise*. Out of the *Ocean* into

Simlerus, *Ortelius*.

Fracastorius.

In Greenland a Maſt was digged out of the top of an high Hill with a pully hanging to it.

into the *Mediterranean Sea*, there is a continual *current* by the *ſtreights* of *Gibraltar*; another *Current* into the ſame out of the *Euxine Sea*, by the *Thraſian Boſphorus*; beſides, very many and great *Rivers*. And which way can it *exonerate* it ſelf? for thoſe vaſt *flouds* do not *increaſe* it. And *Solomons Circulation* of humours in the *Macrocoſm* above mentioned, is very

ry conſiderable; nor is the *Analogy* in this particular between that and the leſſer World obſcure. For the *Sea* in that anſwereth to the *Fountain* of *bloud* in this. The *Subterraneal Rivers*, and thoſe *above ground*, may anſwer to the *veſſels* containing the *bloud*. And both theſe anſwer to the *vaſa attrahentia, & deferentia*; for the *ſubterraneal chanels* carry the *water from* the *Sea*, the *Rivers* return it *to* the *Sea*.

Again,

Again, as both ſorts of *veſſels* are *greater near* the *fountain* of *bloud* in the body; ſo are the *chanels biggeſt neareſt* the *Sea* their fountain; and though it may ſometimes happen otherwiſe, yet if the banks of any are *wider*, ſo that they look like *lakes* a great while before they diſcharge themſelves into the *Ocean*; I look on it but as *caſuall*, and bearing proportion with the *divarications* of *veſſels* in mans body. Again,

veſſels

veſſels in our bodies are from *trunks* (like trees) branched out, *in ramulos*, *ſurculos*, and other *minute diſtributions* (anſwering to the *ſtalks* of *leaves* or *fruits*) which are again *ſubdivided* into *capillary conveyances*, and thence the *bloud* and *humours* paſs *per poros* for the *nutriment* of the *ſolid parts*; ſo are the *Rivers above* (and without doubt the *chanels* under ground in *proportion* to them) from their main *trunks* divided into

into *Brooks*, thoſe *Brooks* into *Rivulets*, theſe into *leſſer conveyances* as it were *capillary veſſels*, and every where *diſperſed* and *diſſeminated* according to the *exigence* of *nature*, and thence paſſe through the *pores* of the Earth, that no part may be deſtitute of a *due ſupply* for the *Generation* and *increaſe* of all bodies. Again, the *æſtus maris* bears ſome proportion to the *pulſe* of the *bloud* in the *Microcoſm*, the *ebbing* and *contraction* of

of the *water* is the *ſyſtole*; the *turgeſcency*, *floating*, and *dilatation* of the *water*, is the *diaſtole*; the ſpace between both the *periſyſtole*. Again, as in the *heart* and in ſome *veſſels only* that carry the bloud that *motion* is to be found; ſo is the *æſtus* diſcovered in ſome *veſſels only* that conveigh the humour of the *greater World*. Not that I look on this as any kind of *proof*, but as an *illuſtration*, the better to guide our conceptions

in

in Natures *Water-works*, by what is ſeen that we may the better underſtand that which is not ſeen, or at leaſt not ſo plainly. However enough to our purpoſe it is, that ſuch *Subterraneal chanels* there are from the *Sea* under the *Earth*. As for the common *ſcruple* of the improbability of the *waters* riſing ſo *high* out of the *Sea* to the *ſuperfice* of the Earth, it is the leaſt hindrance of an hundred; for if there be

a

a *continuity* of the *air*, *waters* will riſe as *high* as the *ſurface* of the *waters* from whence they came, as appears *in Siphunculis*; and therefore may riſe to the *tops* of the *higheſt hills*. For the higheſt places of the *Sea* anſwer to the *tops* of the *loftieſt mountains*, or elſe the earth could not be *ſpherical*. To this the *Pſalmiſt* is conſonant, *Pſalme* 104. *The waters*

Were it not for bounds God hath ſet, the waters are high enough to turn again and cover the earth, v. 9. *He hath Chambers or Receptacles by which to water the hills*, v. 13

ters go up by the Mountains, they go down by the Valleys unto the place which thou haſt founded for them. With what violence do the *waters* guſh out of Saint *Winifreds Well* in *Wales* on the top of a great hill? Again, *compreſſion* of thoſe vaſt quantities of water *forcing* them into *Earth*, may make them *mount* the higher; as *Hoggſheads* full and newly broached run the *faſter*. I'le illuſtrate this by the following-

lowing *experiment.* Take two round *Boards* equally ſized, faſten ſtrong *Leather* to thoſe *Boards* above, below, and on the ſides ſo cloſe that they may *hold water*; from the lower board let an hollow *pipe* go up on the out-ſide *higher* than the upper board; fill this *inſtrument* with *water*; then put a *weight* on the upper board, and proportionable to the *weight* ſo will the *waters mount* to

to a greater or leſſer *height*, as in this *Figure.*

A. *The upper board.*

B. *The lower board.*

ccc. *The Leather on every ſide.*

D. *The*

D. *The Pipe through which the water will leap upwards.*

E. *The weight of compreſsion.*

But it may be *objected*, that this is an *adventitious* and *external compreſsion*; and not that of the *water* onely. But I anſwer, that ſuch a *compreſsion* there is in the *Sea* from *agitation* of the waters by *wind*, and other *cauſes*; and yet that waters by their own

na-

natural compreſsion will *mount* higher than the *brims* of the *veſſel containing*, may be evident from this, that if we take one of a conſiderable capacity, with a *pipe* on the outſide ſomething higher than its *brims*; and *rub* the *brims* with *Roſin*, or ſuch like Gum, and then fill it full till no more *water* can be poured in, ſtopping the *orifice* of the *pipe* in the mean time with ones *finger*, then removing the

fin-

finger, it will preſently *burſt out* at the *pipe*. It may be demanded then, Why are not all Rivers *ſalt*? To this I anſwer; That moſt of them have their waters *ſtopped* and *percolated*, and ſo leave their *ſaltneſſe* behind. But as for thoſe that have no hinderance, they are not onely *ſalt*, but do conſtantly *ebbe* and *flow*, as hath been exemplified already. Thoſe that have a ſtoppage by a *bank* of *earth* to ſuch an

heighth onely, iſſue *freſh water* at their *ebbe*, and at their *flote ſalt*; as that *fountain* in the *Iſle of Gades* doth. Thoſe that are *ſalt*, and have no *tides*, are ſuch as after *percolation* waſh ſome *rocks of ſalt* before their *eruption*.

See *Ortel. map.* epitomixed in the deſcription of *Gades.*

5. Where mighty *flouds* come with *violence*, as theſe muſt of neceſsity do by reaſon of the vaſt *quantity*, the mighty *compreſsion*, and the unſpeakable *weight* of the *waters*

of

of the *Ocean*, they will eaſily carry with them *light*, and with no great difficulty *ponderous bodies*. This needs not, and therefore ſhall not, have any proof.

6. *Heterogeneous bodies* by the *weight* and *ſtrength* of *waters* forced into a *narrow place*, cannot eaſily by the *return* of thoſe beyond them, (if they return at all the ſame way) be brought forth again. Becauſe there is little or no *compreſſion*, and

therefore the return of the water is *leaſurely*, and *by degrees*. This is obvious to Senſe, and therefore needs no *illuſtration*.

7. And as much evident to ſenſe it is that any *heterogeneous bodies* ſo remaining *unremoved*, ſoon gather *ſlime* and *ſand* about them, and in a ſmall ſpace of time are *lodged* as it were *in firm ground*. This is no more wonderful than to have any *veſſel* in the *Micro-*

coſm

coſm obſtructed by *crude* and *heterogeneous bodies*, *cæteris paribus*. Nor need we ſeek for rare *Water-works*; for every ordinary *gutter* and *ſink* will demonſtrate this.

And thus (*Doctor*) you have my Opinion of the way by which thoſe *Cockle*, *Muſcle*, and *Oyſter-ſhells* you mentioned, were brought and lodged in that place. If they were truly *ſhells*, they were conveyed either *above* or *under ground*;

but not ſo uſually *above*, therefore *under*. If *under* ground, then by *natural* or *voluntary agents*. If by *natural* and *neceſſary*, then either by *Vapours*, *Exhalations*, or *Waters*; but this is done *uſually* and *commonly* by none of the former, therefore by the laſt; which is the more *likely* to effect it,

1. Becauſe there are *numerous generations* in the Earth.

2. Where many *generations* are, much *water* is neceſſary. 3. No

3. No *fountain* can ſupply the *earth* to theſe purpoſes but the *Sea*, which is the *original* of all *waters*.

4. Though the *Sea* communicate his *waters* to places near it by *percolation*; it muſt and doth ſupply that afar off by whole *flouds*, *gulphs* and *indraughts*.

5. Where *mighty flouds* come with *violence*, they will carry very *weighty bodies* with them.

6. *Heterogeneous bodies* are not eaſily brought back

back again when they are *forced* into a *narrow place.*

7. But in a little time gather *slime*, and *earth* about them, and so are lodged in firm ground.

Psal. 139.14.

Marvellous are thy works (O Lord) and that my soul knows right well.

FINIS.